

Workshop on “Simulation to Support C4ISR Acquisition & Transformation”

Dr. Judith S. Dahmann

Senior Principal Scientist

MITRE Corporation

Scientific Advisor

Director of Interoperability, AT&L

Agenda

- Context
- Results
- Summary

Background

- An Information Superiority Modeling & Simulation Master Plan (IS M&S MP) is in coordination, addressing application of M&S to all areas; e.g.,
 - Training
 - Support to operations
 - Acquisition
- In the area of acquisition, the IS M&S MP calls for the following actions:
 - Recommend and outline methods for providing improved M&S support to C4ISR acquisition
 - Provide recommendations of desirable policy changes and initiatives..., along with metrics...

Essential Workshop Facts (1 of 2)

- Why?
 - Identify high priority M&S needs and recommend policy changes, initiatives
 - Provide input to *investment plan* for M&S to support the acquisition and transformation of C4ISR systems
- Where & When?
 - The MITRE Corporation, McLean, VA
 - 2 - 4 April 2002

Essential Workshop Facts (2 of 2)

- Who?
 - Sponsors
 - ASD(C3I)
 - OUSD(AT&L) {IO, DMSO}
 - Participants
 - 44 experts from government, industry, FFRDCs
 - ~25% provided by AIAA TC on Information & C2 Systems

Recruiting Was Tough....



“But I don’t give a damn about M&S, acquisition or C4ISR!”

Break-out Group Leadership

- **Sensors**
 - Chair: Joe Manzo (BAE Systems)
 - MITRE Support: Norm Stewart
- **Communications**
 - Co-Chairs: Bradd Stubbs (DISA)/ Leland Joe (RAND)
 - MITRE Support: John Stine
- **C2/Information Processing:**
 - Chair: Chuck Burdick (LMCO)
 - MITRE Support: Zach Furness
- **System of Systems**
 - Co-Chairs: Col Russ Peter (OSD)/ Ken Konwin (BAH)
 - MITRE Support: John Roberts
- **Synthesis**
 - Co-Chairs: Stuart Starr (MITRE)/Phil Zimmerman (DMSO)
 - MITRE Support: Judith Dahmann

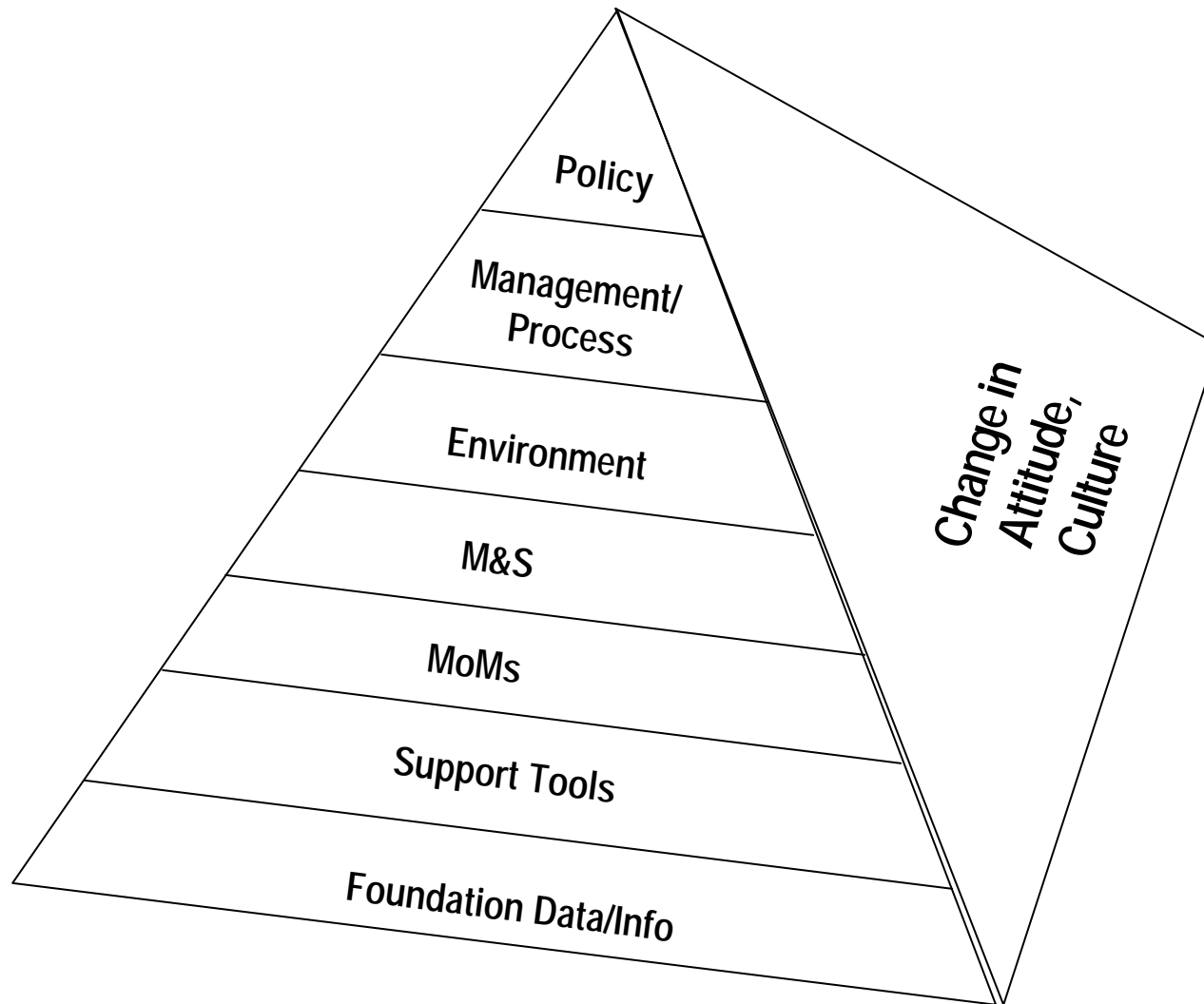
Setting the Stage -- Plenary Speakers

- Sponsors charge to workshop
 - V.Garber/J. Dahmann, USD(AT&L)
 - O. Wormser, ASD(C3I)
 - M. Lilienthal, DMSO
- Institutional Perspectives
 - S. Kissin, IS M&S MP
 - S. Hawthorne, DoDD 5000
- Service Perspectives
 - P. Faye/J. Roberts, USAF, JSB
 - H. Crisp, USN, CEE
 - K. Pickett, USA, FCS/JVB

Workshop Process

- Working Groups organized by:
 - **System type** (Communications, Sensors, C2/Information Processing)
 - **Systems-of-systems**
- Working Groups addressed M&S needs by phases of acquisition process
 - Began with list of strawman M&S capability objectives
 - Evaluated M&S needs
 - Identified highest priority M&S shortfalls, options to ameliorate them
- Synthesis Group
 - Formulated a synthesis framework
 - Identified similarities and differences in Working Groups' findings, recommendations

Framework for Synthesis



Synthesis Framework: Highest Priority Needs

Category / Panel	Comms	Sensors	C2/IP	S-O-S
Policy			<input type="radio"/>	<input type="radio"/>
Mgt/Processes				<input type="radio"/>
Environments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
M&S	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MoMs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Support Tools	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
Foundation Data/Info	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Highest Priority Needs: Policy, Management/Process

- Policy
 - Broaden DoDD 5000 to address critical System-of-System (S-o-S) issues
 - Provide enhanced government and contractor access to key information
- Management/Process
 - Establish mechanisms to capture insights from S-o-S events

Highest Priority Needs: Environments, M&S

- Environments
 - Create standards-based, distributed, collaborative engineering environments with appropriate levels of security, scalability, responsiveness
 - Improve government/industry interoperability
 - Maintain evolving interfaces with M&S throughout the acquisition process
 - Provide interfaces, access to real, simulated systems
- Models and Simulations
 - Create linked families of M&S including
 - A meta-reference model
 - High-level, quick turn around assessment tools
 - Modeling of information infrastructure
 - Communications models
 - Better representation of decision-making processes

Highest Priority Needs: MoMs, Support Tools, Foundation Data/Info

- Measures of Merit (MoMs)
 - Develop and evolve a family of MoMs that link systems, functions, missions, campaign, policy
- Support Tools
 - Create scenario generation tools that are reusable, tailorable (subsuming Blue force laydowns)
 - Create common environmental representations
- Foundation Data/Information
 - Assemble system performance data (current, near-term, long term)
 - Develop common standards for inputs to drive models
 - Develop architectural data (linked to executable simulations)

Summary of Major Recommendations

- **Policy and Management/Processes :**
 - Revise DoDD 5000 to clarify the acquisition of a system-of-systems
 - Focus acquisition process on achieving mission capability
- **Environments and M&S products :**
 - Create shared collaborative environments in which to address interoperability issues
 - Develop a reference model of cross-functional, cross-hierarchy M&S
- **MoMs:**
 - Develop sets of measures of system performance linked to measures of mission effectiveness
- **Support Tools and Foundation Data/Information :**
 - Create common environmental representations and libraries of reusable scenarios
 - Create easily accessible, broadly available data on architectures, systems performance, organizational behavior

Recommended Actions

- **USD(AT&L)**
 - Revise DoDD 5000 to address S-o-S more completely
- **ASD(C3I)**
 - Implement Workshop recommendations in the next version of the C4ISR IS M&S MP
- **Director, DMSO**
 - Ensure that emerging Service environments are composed of common/interoperable components
- **Director, Interoperability**
 - Establish and champion policy and an associated process to employ common/interoperable components in emerging acquisition environments

Next Steps

- Dissemination of the findings and recommendations to the key communities; e.g.,
 - Acquisition (NDIA Conference in June)
 - C4ISR (International C2 Conference in September)
 - M&S (NATO M&S Conference in October)
- Explore potential follow-on efforts; e.g.,
 - Assist in the development of an investment strategy to respond to the highest priority needs
 - Convene future workshops to explore options to ameliorate shortfalls